

Application No.: 10/633,588

IN THE DRAWINGS:

The attached sheet of drawings includes Fig. 1. This sheet, which includes Fig. 1, replaces the original sheet including Fig. 1. Fig. 1 has been amended to label the first resistor as 3b and the second resistor as 3a.

Attachment: Replacement Drawing Sheet

REMARKS

Introduction

In response to the Office Action dated November 20, 2006, Applicants have amended the specification, the drawings, and claims 1, 5, 6, and 9-13. Claims 15-17 have been added. Claims 2-4 have been cancelled. Support for the amendment to claim 1 is found, for example, in originally filed claims 2-4. Support for new claims 15-17 is found, for example, in Fig. 3. Care has been taken to avoid the introduction of new matter. In view of the foregoing amendments and the following remarks, Applicants respectfully submit that all pending claims are in condition for allowance.

Claim Objections

Claim 5 was objected to for an informality, specifically for depending on itself. In response, the Applicants have amended claim 5 to depend on claim 1. Accordingly, withdrawal of the objection is respectfully solicited.

Claim Rejection Under 35 U.S.C. § 102

Claims 1-3 and 6-7 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,188,059 (hereinafter Nishiyama).

Claims 2-4 have been cancelled. Independent claim 1 has been amended to include the allowable subject matter of dependent claims 2-4. For this reason, *inter alia*, independent claim 1 is allowable.

Claim 6 has been amended to recite, "...a temperature sensor for monitoring a temperature of the avalanche photodiode."

The Office Action states, “Nishiyama et al. discloses an optical receiver circuit 10 comprising an avalanche photodiode 1, a voltage source, and a temperature sensor 40.” The Office Action asserts that the multiplication factor of the photodiode of Nishiyama is kept constant by adjusting the bias voltage to the avalanche photodiode based on the temperature monitored by the circuit 40.

The avalanche photodiode of Nishiyama is used by supplying a bias voltage of several tenths of a volt to appear to control the multiplication factor of the avalanche photodiode (col. 5, lines 55-57). In fact, the carrier multiplication factor of the avalanche photodiode displays a large temperature dependence in Nishiyama (col. 1, lines 54 – 59; col. 5, lines 32 -42). Accordingly, Nishiyama describes a circuit to compensate for the large temperature dependence (col. 1, lines 63-67) .

The Office Action asserts that Nishiyama provides a variable resistor 40TR4 to maintain the multiplication factor. However, variable resistor 40TR4 is for dividing the zener voltage of the zener diode 40TD1 cooperating with other resistors, such as, 40TR3 and 40TR5 (Fig. 2; col. 6, lines 18-22). The circuit 40TR4 does not monitor the temperature of the avalanche photodiode, directly or indirectly. Thus, the avalanche photodiode of Nishiyama does not teach or suggest a temperature sensor, as required by amended claim 6.

The bias voltage V_{APD} of Nishiyama does not dynamically vary its value according to the temperature of the avalanche photodiode. Therefore, Nishiyama fails to teach or suggest, “...wherein the voltage divider includes a variable resistor having a resistance controlled by the temperature sensor.”

Withdrawal of the foregoing rejections is respectfully requested.

Allowable Subject Matter

Claims 4-5 were objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claims 2-4 have been cancelled. Independent claim 1 has been amended to include the allowable subject matter of dependent claims 2-4. For this reason, *inter alia*, independent claim 1 is allowable. Therefore, claim 5, which depends on amended independent claim 1 is also allowable.

Claims 9-14 are allowed.

New Claims

New claim 15 recites, "...a reference generator for outputting a reference voltage to the controller, wherein the controller controls the voltage source based on a comparison of the reference voltage with the divided voltage output from the voltage divider." Additionally, dependent claims 16 and 17 recite patentably distinguishing features of their own. Nothing in the cited reference teaches or suggests the described subject matter. It is submitted that these new claims distinguish over the cited reference.

Conclusion


In view of the above amendments and remarks, Applicants submit that this application should be allowed and the case passed to issue. If there are any questions regarding this Amendment or the application in general, a telephone call to the undersigned would be appreciated to expedite the prosecution of the application.

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To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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